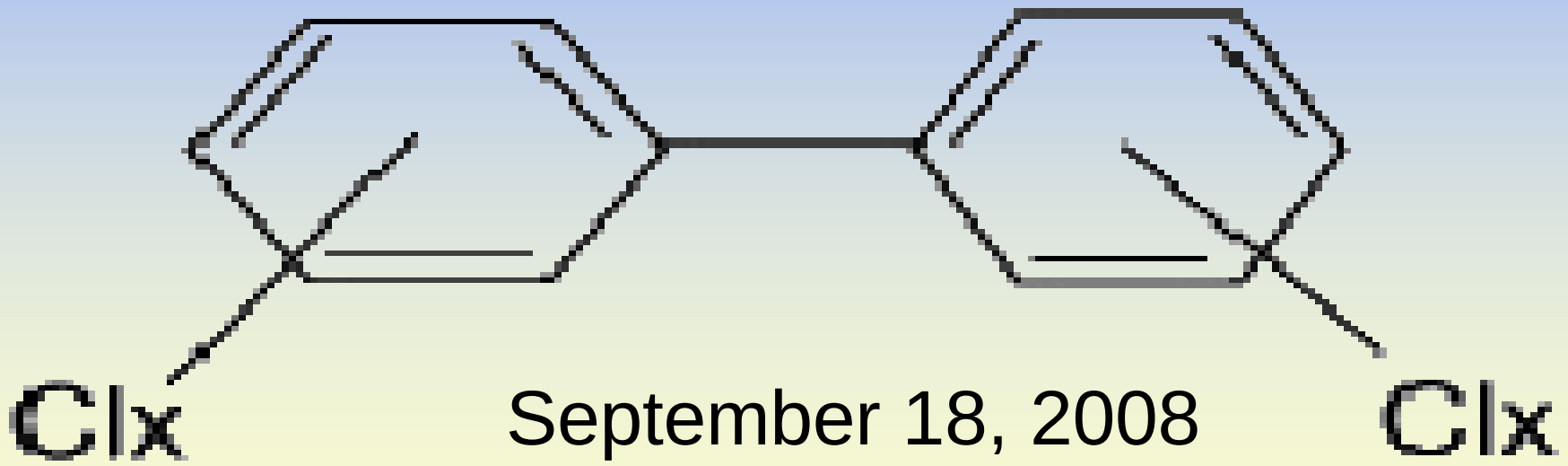
Technical Advisory Committee

PCB Point Source Monitoring Guidance Document



September 18, 2008

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Overview

- Objective
- Review
  - Response to Comments –
    - 1/8/08
    - 9/9/08
  - Guidance Development
- Meeting Summary
- Next Steps

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Objective

To establish procedures for implementing voluntary point source monitoring of PCBs in support of TMDL development.

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Monitoring by dischargers:

1. municipal (major and minor) and industrial wastewater facilities, and

2. industrial storm water discharges, whether operating under an individual or general storm water permit.

Sample collection with low-level analysis using the EPA Method 1668A to determine individual PCB congener concentrations.

History

- DEQ internal development – Fall 2006
- Technical Advisory Committee (TAC)
  - March 29th (’07)
  - June 11th (’07)
  - July 25th (’07) – conference call
  - August 10th (’07) – conference call
  - January 8th (’08)
- DEQ internal review – summer
- TAC meeting – Sept 18th

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Comments Received

- Navy/DoD Regional Environmental Coordination – NAVSEA LQAO - January 11, 2008
- Southern Environmental Law Center (SELC) - February 14, 2008
- Virginia Association of Municipal Wastewater Agencies (VAMWA) – February 15, 2008 (September 9, 2008)

Response to Comments following the January 8th meeting were circulated to TAC members on July 16, 2008.

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Navy/DoD

January 11, 2008

Method 1668A Guidance Comments

- Teflon tubing
- Sample containers
- Composite sample at laboratory
- Sample clean-up
- Sample storage (blue-ice)
- Solid-phase extraction
- Spiking, preservation, calibration

Response: Refer to Sep.'08 Guidance & App. C & D for changes.

SELC

February 14, 2008

The number of samples for industrial dischargers who have combined process wastewater and storm water discharges should be increased to two wet and two dry samples.

Response: The monitoring objective is to identify and quantify sources of PCBs for WLA development. While the sample frequency for industrial facilities with combined process wastewater and storm water may be less, DEQ staff believes the proposed sample frequency meets this objective.

VAMWA

February 15, 2008

Issues regarding Method 1668A

Sampling Frequency

Source Assessments

- Intake
- PS vs NPS
- Storm water general permits

VAMWA

Feb 15, 2008

VAMWA maintains that EPA Method 1668A is unable to produce quality data at the low-levels. Data generated is qualitative at best.

Response: Method 1668A is performance based capable of achieving reporting levels below those specified by the method. By controlling interferences and laboratory background contamination (refer to section 10.3.3. of the Method), laboratories can and do establish Estimated Method Detection Limits (EMDLs) and Estimated Minimum Levels (MLs) of 5 pg/L and 10 pg/L.

VADEQ agrees with EPA that PCB data generated via Method 1668A supports a quantitative concentration that can be used in TMDL development to calculate a PCB load.

VAMWA

Feb 15, 2008

Data reporting - section IV.F refers to permit requirements for six samples and should be changed to four to conform to the other parts of the document.

Response: Done

VAMWA

Feb 15, 2008

The process should focus on identifying the true sources of PCBs, and if it's clear that effluent concentrations are a pass-through, that should be reflected in the TMDL identification of sources. We refer you to DEQ's efforts on mercury which, like PCBs, appears to be largely a NPS & air deposition issue.

Response: Agree. One of the required elements to TMDL development is source characterization associated with the pollutant of concern (EPA 1999). The point source monitoring is one avenue of data collection coupled with ambient water column and fish tissue monitoring.

VAMWA

Feb 15, 2008

Continue … if it's clear that effluent concentrations are a pass-through, that should be reflected in the TMDL identification of sources.

Response: Agree. "Some facilities have expressed an interest in monitoring their water supply intake in order to demonstrate that the WWTP is not an actual source of PCBs. Influent and effluent data from WWTPs in Washington State and New Jersey indicate that the plants effectively remove greater than 95% of the PCBs in the influent to the plant. Therefore, comparing PCBs concentrations from intake and effluent does not demonstrate that intake is the only source of PCBs. Any effort to make such a demonstration must include intake, WWTP influent and effluent analysis along with a comparison of the individual congeners in each. Sample collection and analysis at all three locations should be consistent with this guidance and procedures with particular attention to this section and PCB Reporting Requirements (Section E) below."

TMDL Summary: Total PCB Loads and Percent by Source Category to the Tidal Potomac and Anacostia Rivers

Source category	Baseline (g/year)	TMDL (g/year)	Percent of Baseline	Percent of TMDL
Potomac @ Chain Bridge	16,433	329	44%	22%
Lower Basin Tributaries	2,857	407	8%	27%
Direct drainage	10,996	413	30%	27%
WWTP	762	68	2%	5%
CSO	3,020	61	8%	4%
Atmospheric deposition	3,070	217	8%	14%
Contaminated sites	15	10	<0.1%	<1%
TOTAL	37,156	1,505		

Baseline WWTP load comparison to total PCBs by cell

Cell	Trib Name	tPCB (g/yr)	WWTP Name	WWTP tPCB (g/yr)	WWTP % of total
74	Potomac R.	1274.40	Blue Plains	701.00	55%
197	Pohick Cr.	46.82	Noman Cole	16.90	36%
151	Mattox / Monroe Cr.	9.75	Colonial Beach	2.95	30%
183	Neabsco Cr.	6.90	H.L. Mooney, Dale City #1, Dale City #8	1.81	26%
209	Four Mile Run	192.85	Arlington	16.80	9%
54	Potomac R.	49.62	NSWC- Indian Head	2.47	5%
206	Hunting /Cameron	513.38	Alexandria	16.70	3%
202	Piscataway Cr.	53.64	Piscataway	1.64	3%
158	Port Tobacco R.	11.83	La Plata	0.26	2%
176	Mattawoman Cr.	9.47	NSWC- Indian Head (2 pipes)	0.19	2%
135	Breton Bay	17.04	Leonardtown	0.22	1%
56	Potomac R.	58.37	Mattawoman	0.67	1%
154	U. Machodoc Cr.	10.82	Dahlgren Sanitary District	0.12	1%
44	Potomac R.	11.18	Quantico - Mainside	0.11	1%
170	Aquia Cr.	36.29	Aquia	0.21	1%
178	Mattawoman Cr.	54.28	Indian Head	0.07	0%
21	Potomac R.	29.23	NSWC-Dahlgren	0.02	0%
			Total	**762**	

Staunton River (Effluent) PCB Results

Facility	Sample Date	Total PCB (pg/L) *Blank adj	Comments
Burlington Hurt (DEQ)	January-06	**60,372**	Plant Fully Operational
Burlington Hurt (DEQ)	August-07	**7,222**	Plant Closed - Early August Sample
Burlington Hurt (DEQ)	August-07	2,141	Plant Closed - Late August Sample
Burlington Hurt (Facil)	August-07	**6,888**	Plant Closed
Altavista STP	January-06	1,979	Questionable result due to background contam. - adj
Altavista STP	August-07	**9,998**	
Dan River, Inc	January-06	504	Questionable Sample- volume (Plant is closed)
Clover Power Station (001)	August-07	190	
(009)	August-07	31	

Influent & Effluent

(wet & dry sampling)

WWTP	Total PCBs (ng/L)		TSS (mg/L)	
	Influent	Effluent	Influent	Effluent
Walla Walla (WA)	**9.6 mgd**			
Dec 12-13, 2006	44.10	0.40	180	1
Feb 13-14, 2007	11.10	0.48	158	1
Apr 10-11, 2007	8.86	0.25	129	1
Mean	*21.35*	*0.38*	*156*	*1*
College Place (WA)	**1.6 mgd**			
Dec 12-13, 2006	12.90	0.254*	240	1*
Feb 13-14, 2007	22.60	0.336	218	1
Apr 10-11, 2007	10.74	0.35	181	1
Mean	*15.41*	*0.30*	*213*	*1*
Camden C. (NJ) 25 mgd	**798**	**7.8**		

Sources: Lubliner 2007

DRBC 2007

VAMWA

February 15, 2008

Recommend that sampling not be required if the permittee demonstrates that

1- the drainage area is small (say <100 acres),

2- there is no history of PCB groundwater contamination,

3- no manufacturing or power production occurred on the site, or

4- stormwater does not come into contact with industrial processes.

Response: PCB contamination may occur through inadvertent by-products generation, or from aging infrastructure within the facility (e.g., leaking PCB electrical equipment, paints, sealants, etc.). Many of these contamination issues are due to temporary storage of old transformers, etc. that may have leaked. The best way to demonstrate a facility is not the source of PCB contamination is through monitoring.

Recommend that sampling not be required (con't)

Response: The guidance states that "…an industrial facility may ask for a waiver from monitoring if the owner can certify that PCBs were never present on the site."

Additional language has been added for clarification: "Under the TMDL, this facility would receive a zero PCB allocation. If the facility is later found to be a source, they will not be allowed to discharge any PCB load under their permit."

Additional Comments

VAMWA

September 9, 2008

Summary of Issues:

1. Ignoring QLs (Quantification Level)
2. Not generating effluent PCB data at the TMDL development point…
   - Calculate WLAs
   - Lower Potomac process effluent data not used in modeling or otherwise
   - Generate data later during implementation
3. Effluent data should be used to satisfy the various needs for data, both pre-TMDL and post-TMDL**.**

VAMWA

September 9,2008

1. **Ignoring QLs stated in the method.**

Response: We are not ignoring QLs, but following the procedures to control background contamination as described in the method (below). Laboratories can and are reporting real EML (QL) data based on established analytical procedures. Method 1668A states:

1.3 The detection limits and quantitation levels in this Method are usually dependent on the level of interferences and laboratory background levels rather than instrumental limitations. The estimated minimum levels of quantitation (EMLs) in Table 2 are the levels at which the CBs can be determined with laboratory contamination present. The estimated method detection limit (EMDL) for CB 126 in water is 5 pg/L (picograms-per-liter; parts-per-quadrillion) with no interferences present.

This is further described under Section 17 Quantitative determination

[refer http://www.epa.gov/waterscience/methods/method/other.html]

VAMWA

September 9,2008

1. Ignoring QLs (con't)

- The Method 1668A is performance based
- Clean sampling techniques employed (refer to Appendix C)
- Increase sample volume ≥ 2L
- Laboratory Requirements (App D)
  - Clean room (extraction and analysis)
  - Segregate/bake glassware at high temps
  - Increase pre- and post-extract injection rinses
  - Minimize use of solvent for extraction

VAMWA

September 9,2008

2. "Option of not generating effluent PCB data at the TMDL development point…"

- Calculate WLAs

Response: We are following the required elements of the TMDL Submittal -

"EPA will only approve TMDL submittals that include the ten elements listed.." (TMDL Guidance August 12, 1999)

3. Identification of the amount or degree by which the current pollutant load in the waterbody deviates from the pollutant load needed to attain or maintain water quality standards (40 CFR 130.33(b)(3)).

2. Option of not generating effluent PCB data (con't)

- In Lower Potomac TMDL effluent data were not used in the modeling or otherwise.

Response: Effluent monitoring data were used to develop baseline load calculations for all major point sources in the model as per EPA requirements.

External loads included inputs:

- Potomac at Chain Bridge,
- NE and NW Branches of the Anacostia,
- Direct drainage,
- CSOs,
- Point source discharges,
- Contaminated sites, and
- Atmospheric wet/dry deposition to the water surface.

Refer to Tidal Potomac PCB TMDL (Table 9 and Appendix A) and the Potomac Modeling Report.

VAMWA

2. **Option of not generating effluent data (con't)**

   - Recommend the Guidance provide the options that point source effluent data be generated later during the implementation.

Response: EPA will only approve TMDL submittals that include the ten elements listed..” (TMDL Guidance August 12, 1999). This section of the Guidance quoted will be modified.

3. Recommend effluent data, whenever generated, should be used to satisfy the various needs for data, both pre-TMDL and post-TMDL.

Response: Agree. The Guidance states “Samples previously collected and analyzed, may be used in satisfying the total number of samples required provided monitoring and analysis are conducted in accordance with Sections C and D of this guidance.”

Guidance Document

- Introduction
- Background
- Authority
- Definitions
- Guidance
  - Facilities identified for voluntary monitoring
  - Monitoring frequency
  - Sample collection and analytical requirements
  - Analytical laboratories
  - PCB reporting requirements
  - References
- Appendices

III. Authority

- Development of a PCB TMDL requires consideration of the Virginia water quality criterion for Total PCBs (9 VAC 25-260-140) to protect the “fishable” designated use (9VAC 25-260-10). The current PCB compliance Method 608 (40 CFR Part 136) is incapable of meeting these regulatory requirements as the method detection level is well above the water quality criterion. In order to characterize PCB loadings for TMDL development, DEQ is implementing low-level PCB monitoring as recommended by EPA (Appendix A). The monitoring will be coordinated through the Virginia Pollutant Discharge Elimination System (VPDES) permit and TMDL programs.

A. Facilities Identified for Monitoring

- Once a PCB impaired segment appears on the TMDL development schedule, the regional TMDL coordinator will be responsible for facility notification of data needs. If data for TMDL source characterization are not available through this voluntary effort, DEQ may require the data by letter or through VPDES permit special conditions (Appendix B).

Guidance Document

- Appendices
  A. NPDES Permitting Authorities have some discretion in specifying methods more sensitive than 40 CFR Part 136**.** Personal communication from Brian P. Trulear, NPDES Program Manager, EPA Region 3. June 8, 2007.
  B. Data Notification Needs
  C. Sample Collection Methods for Effluent and Storm Water
  D. Analytical Quality Control Requirements
  E. **Reporting Requirements for Analytical (PCB) Data Generated Using EPA Method 1668A**

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VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Method 1668A (con't)

1.2 This Method is for use in data gathering and monitoring associated with the Clean Water Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act, and the Safe Drinking Water Act. It is based on a compilation of methods from the technical literature (References 3-5) and on EPA Method 1613.

- http://www.epa.gov/waterscience/methods/method/other.html

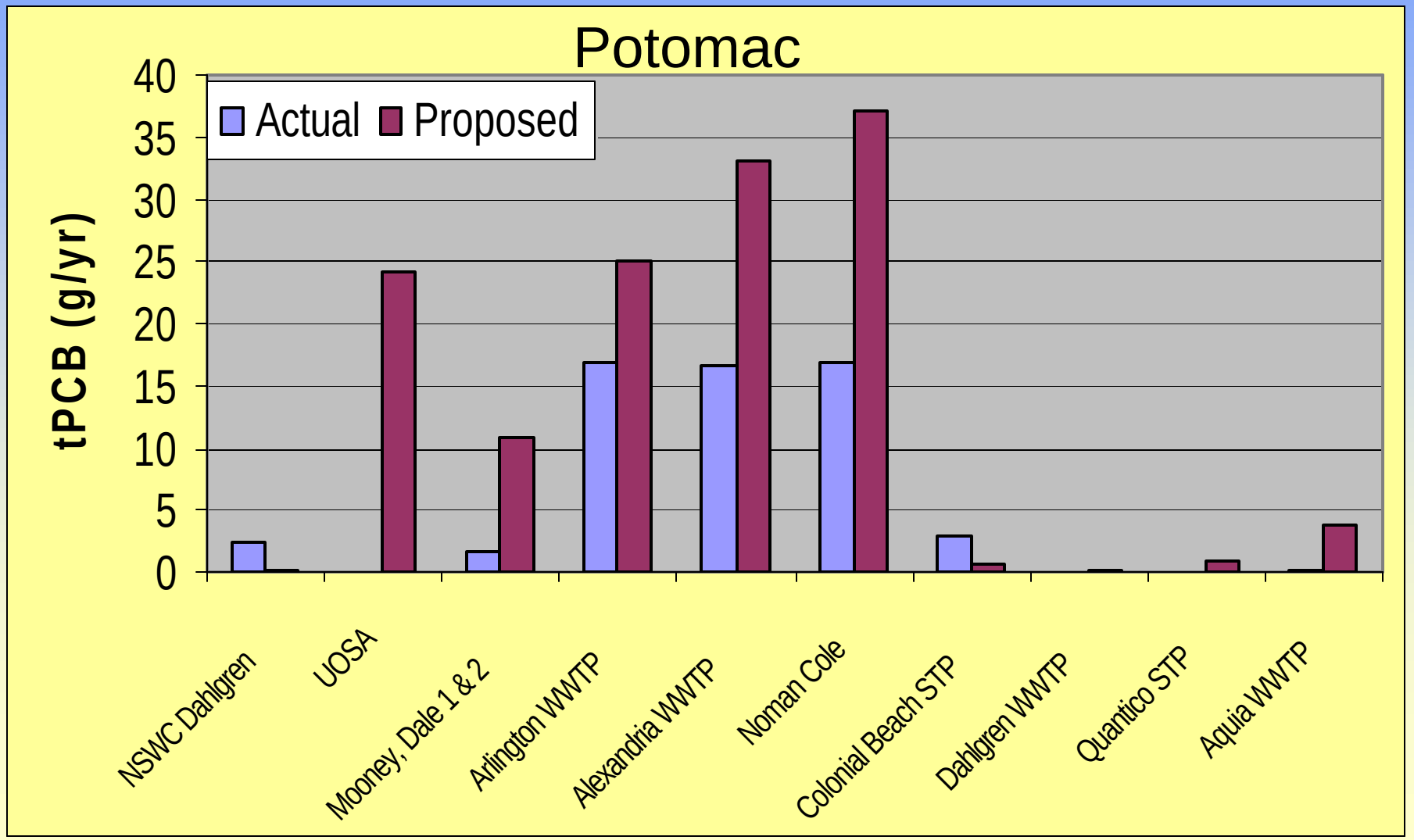
Method 1668A Current Status

The multi-lab performance data and peer review info is soon to be incorporated into the information on the EPA website:

http://www.epa.gov/waterscience/methods/method/other.html

- Media tested
  - Fish tissue (6-labs)
  - Wastewater (6-labs)
  - Biosolids (4-labs)
- Method Validation Report
  - Peer reviewed

Annual PCB loads by facility
Data vs proposed WQS (640 pg/l)



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